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July 18, 2002

Ms. Kristy Chew
Siting Project Manager
California Energy Commission
1516 Ninth Street, MS-15
Sacramento, CA 95814

RE: AFC Supplement C
Cosumnes Power Plant (01-AFC-19)

On behalf of the Sacramento Municipal Utility District, we are filing 125 copies of Supplement C to the AFC. This supplement analyzes potential impacts to the project the addition of a zero-liquid discharge (ZLD) system.

Please call me if you have any questions.

Sincerely,

CH2M HILL

John L. Carrier

John L. Carrier, J.D.
Program Manager

c: Colin Taylor/SMUD
Kevin Hudson/SMUD
Steve Cohn/SMUD

COSUMNES POWER PLANT
(01-AFC-19)

AFC SUPPLEMENT C
(Zero-liquid Discharge Arrangement)

Submitted by

SACRAMENTO MUNICIPAL UTILITY DISTRICT (SMUD)

July 18, 2002

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2485 Natomas Park Drive Suite 600
Sacramento, California 95833-2937

EXECUTIVE SUMMARY

The Sacramento Municipal Utility District (SMUD) is proposing to implement a zero-liquid discharge (ZLD) system for Cosumnes Power Plant (CPP). ZLD is designed to process all plant wastewater, returning a relatively high quality distillate stream for reuse in the plant, and producing a solids waste stream suitable for proper landfill disposal. The primary equipment in the proposed ZLD system includes a brine concentrator, crystallizer, and distillate and brine holding tanks. Reverse osmosis may be used for the ZLD system, but is not anticipated at this time.

A ZLD system will have two primary effects on SMUD's overall proposal. First, since process water will not be discharged into Clay Creek as originally proposed, an industrial National Pollution Discharge Elimination System (NPDES) discharge permit will not be required from the Regional Water Quality Control Board (RWQCB). Second, since water will not be discharged, the water stream is essentially cycled more often in the cooling tower and other systems, thereby reducing the amount of water used in the process. The water source will be Folsom-South Canal as proposed in the Application for Certification.

SMUD reviewed each of the 16 environmental categories as it applies to ZLD during its analysis. The addition of the ZLD plant will have no additional impacts beyond those addressed in the AFC in the following areas:

- Air Quality
- Cultural Resources
- Land Use
- Public Health
- Worker Health and Safety
- Socioeconomics
- Agriculture and Soils
- Geologic Hazards and Resources
- Paleontological Resources

Only minor impacts may occur in the following areas:

Biological Resources—The TDS content of the cooling tower drift will not affect the most sensitive species of plants.

Noise—Noise modeling is being performed to determine if the addition of the ZLD equipment will create an increase previously predicted noise levels at the nearest sensitive receptors. A change in noise levels, if any, is expected to be minor.

Traffic and Transportation—Other than a slight increase in construction traffic from having to install the ZLD equipment, the primary impact to traffic will occur from operations. Using Folsom-South Canal water will result in one truck load of salt cake having to be removed from the plant every other day. This minor change will not create a significant traffic impact.

Visual Resources—The brine concentrator will add an 88-foot tall structure to the plant. However, it will only be half the height of the HRSG exhaust stacks. Although visual impacts will remain adverse, they are not considered significant.

> **Hazardous Materials Handling**—Use of the ZLD system will require the plant to use five new chemicals and to increase its use of three other chemicals. These proposed changes do not create a significant impact.
>
> **Waste Management**—An average of 6.8 tons per day of non-hazardous salt cake will be generated by the ZLD system. This will require landfilling about 2,500 tons of salt per year. This increased landfill requirement will not create an adverse impact to the landfill capacity of the County.

There will be an improvement in the level of impacts discussed in the AFC for the following section:

> **Water Resources**—As mentioned above, the use of a ZLD system will eliminate the need to obtain an NPDES permit to discharge the plant's wastewater to Clay Creek. It will also allow an increase in the number of times the cooling water is able to circulate in the Cooling Tower, thus reducing the amount of water consumed by the plant. This surface water consumption is less than the levels described in the AFC.

ZLD will reduce the efficiency of the plant due to the parasitic load of ZLD equipment. The prior reported benefits of discharging water to Clay Creek (water table recharge, water for downstream users, wildlife, water for riparian habitat, support of aquatic biota, etc.) will not be realized using ZLD.

While, AFC Supplement C was primarily developed to address ZLD, SMUD has also charted a course for incorporating a source of reclaimed water to supplement the second phase of CPP, thereby reducing the use of fresh water. SMUD has held preliminary discussions with representatives from the Sacramento Regional Wastewater Treatment Plant (SRWTP) and Galt Wastewater Treatment Plant (GRWTP). Currently, the quantity, quality and availability of reclaimed water have not been established; however, the preferred reclaimed water alternative would involve GRWTP. Also, SMUD has held discussions with Sacramento County Regional Sanitation District (SCRSD) to possibly offset the use of freshwater with recharging groundwater using a reclaimed water source, or by displacing the use of freshwater with other reclaimed water projects within the county. SMUD recognizes the importance of this issue, and is prepared to commit to further study these options, with an option ready prior to groundbreaking on Phase 2.

SMUD envisions using ZLD systems for each phase of the plant. SMUD would plan to interconnect the two systems for process redundancy. The systems will be designed to process a moderate range of influent constituents. The Phase 2 ZLD system can be engineered as water quality constituents become established, and the Phase 1 ZLD system will be engineered to the extent practical for the range of raw water constituents that are currently known.

CONTENTS

1.0 INTRODUCTION

The Sacramento Municipal Utility District (SMUD or District) proposes to develop a natural gas-fueled power plant at the southern edge of Sacramento County, California called the Cosumnes Power Plant (CPP). On September 13, 2001, the District filed an Application for Certification (AFC) with the California Energy Commission (CEC). Supplemental materials, added to the AFC as a result of the CEC's October 11, 2001 Data Adequacy recommendation letter, were docketed on November 13, 2001. Supplement A, assessing the potential impacts from a change in the plant's general arrangement, was filed on March 15, 2002. Supplement B was filed on April 15, 2002. It assessed potential impacts from natural gas compressor stations, a rerouting of construction traffic around the populated portion of Clay East Road, and the widening of the transmission line corridor to allow two sets of transmission poles between the CPP switchyard and the Rancho Seco switchyard.

1.1 Zero-liquid Discharge Site Plan

The District is filing this Supplement C to the Cosumnes Power Plant AFC to provide the Commission and the public with additional information resulting from a change in water resources with the addition of a zero-liquid discharge (ZLD) system to the plant. Use of ZLD will eliminate discharging of wastewater to Clay Creek under an NPDES permit, as originally described in AFC Section 8.14. For Phase 2, SMUD will analyze the availability and potential impacts from using reclaimed water from Galt's wastewater treatment plant.

1.2 Organization of Supplement C

AFC Supplement C is divided into the following sections. Executive Summary provides an overview of the document's contents and conclusions. Section 1.0, provides a brief project introduction. Section 2.0 provides a brief description of the ZLD system. Section 3.0 provides an analysis of the revised general arrangement incorporating the ZLD system. Section 4.0 identifies water use alternatives for future study and incorporation into Phase 2 of the project.

2.0 REVISED PLANT DESIGN

2.1 Zero-liquid Discharge System

2.1.1 System Description

The ZLD system for the SMUD Cosumnes Power Plant will be designed to process all of the wastewater produced by the plant, returning a relatively high quality distillate stream for reuse in the plant and producing a solids waste stream suitable for disposal in a landfill. Wastewater streams to be processed include the cooling tower blowdown, filter backwash, reverse osmosis reject, HRSG blowdown, and miscellaneous plant wastewater. A process flow diagram is provided as Figure 2.2-7 (figures are at the end of the sections in numeric order). This is a conceptual drawing and will be revised in final engineering. (The water balance diagrams are more detailed and take precedence over the process flow diagram.)

The ZLD system will be designed to treat a maximum of 200 gpm wastewater, and will have the capability of operating down to approximately 50 percent capacity. Wastewater will be processed in two steps; the first will be a brine concentrator, which will concentrate the wastewater to approximately a 15 percent salt concentration and produce a clean distillate stream. The second step will further process the remaining wastewater, producing a clean distillate stream and a waste solids stream, and will likely consist of a crystallizer system.

Wastewater will be collected in two brine-holding tanks for each 500 MW phase, each with a capacity of approximately 830,000 gallons. This will provide approximately 5 days storage for the maximum expected cooling tower blowdown (265 gpm) when operating at the maximum ambient temperature of 104 °F. Revised annual average water balance diagrams are provided as Figure 2.2-6aR and 6bR. At the design operating condition of 61 °F ambient, the cooling tower blowdown flow rate will be approximately 180 gpm. The wastewater is transferred to the brine concentrator feed tank where sulfuric acid and a scale inhibitor are added prior to it being pumped through the feed distillate heat exchanger where waste heat from the distillate vessel is transferred to the wastewater. During startup, a small amount of calcium sulfate is also added to the feed to initiate the precipitation process in the brine concentrator. The wastewater then enters a deaerator where entrained gases are removed and vented to the atmosphere, and is then concentrated by the evaporator. The distillate produced by the evaporator (approximately 190 gpm) will be stored in a distillate storage tank with a capacity of approximately 830,000 gallons. The distillate will be polished to HRSG makeup quality and stored in the demineralized water storage tank, or reused in the plant.

The concentrated brine (up to 10 gpm) will be collected in a wastewater storage tank and sent to a crystallizer system. The crystallizer system will operate similar to the brine concentrator, and further concentrate the brine, producing a relatively clean product water stream that will also be reused in the plant. Waste solids produced by the crystallizer system will be sent to a filter press to remove the remaining liquid, and the dry solids stored for proper disposal off site.

The system will be controlled by a Programmable Logic Controller (PLC) that will be designed, furnished, and programmed by the ZLD supplier. A Human Machine Interface (HMI) will be furnished as part of this PLC design and will be used to control and monitor the ZLD system locally. The PLC will interface with the Balance of Plant Distributed Control System (DCS) by a non-redundant data link to a DCS remote I/O cabinet. The DCS Operator Workstations in the Main Control Room may then be used for supervisory control and monitoring of the ZLD system.

A new site plan showing the proposed change is presented in Figures 1.1-3R2 and 2.2-1R2. In addition, a new elevation is provided as Figure 2.2-2R2. The artist rendering submitted in the AFC as Figure 1.1-5, has also been revised to reflect these changes and is provided as Figure 1.1-5R. These figures replace those previously submitted in the AFC.

2.1.2 Major Equipment

The following is a list of the major equipment that will be required for the operation of the ZLD system:

Brine Concentrator System

- Evaporator
- Vapor Compressor
- Plate & Frame Heat Exchanger
- Deaerator
- Feed Pump
- Feed Tank
- Feed Tank Mixer
- Evaporator Recirculation Pump
- Distillate Pump
- Distillate Tank
- Waste/Seed Pump
- Waste/Seed Tank
- Acid Feed Pump
- PLC with HMI

Crystallizer System

- Crystallizer
- Crystallizer Heater
- Distillate Pump
- Distillate Tank
- Prime Condensate Pump
- Condenser
- Brine Feed Pump
- Brine Feed Tank and Mixer
- Brine Recirculation Pump
- Waste/Seed Tank
- Waste/Seed Pump
- Filter Press
- Filtrate Pump
- Filtrate Tank
- Anti-foam Tank, Pump
- PLC with HMI

2.1.3 Chemical Use and Storage

2.1.3.1 Sulfuric Acid

A small amount of sulfuric acid will be added to the Feed Tank to adjust the pH as required for optimum operation of the brine concentrator, and avoid scaling of the downstream equipment. No separate sulfuric acid storage is anticipated to be needed for the ZLD system. The two metering pumps will feed sulfuric acid from the sulfuric acid tank located at the cooling tower, which is part of the circulating water chemical feed system.

2.1.3.2 Scale Inhibitor

A scale inhibitor will also be added to the Feed Tank in order to avoid scaling of the downstream equipment. A chemical storage tote (approximately 400 gallons) will be provided for storage of the scale inhibitor. The tote will be fully-contained.

2.1.3.3 Calcium Sulfate

Calcium sulfate is added to the Feed Tank during startup, to "seed" the precipitation process and avoid fouling of equipment by the saturated brine stream. A 50-gallon mixing tank will be used to supply the calcium sulfate during startup operations. Once the process reaches steady state operation, the calcium sulfate is not required, so no calcium sulfate solution will be stored.

2.1.3.4 Anti-foam Solution

An anti-foam solution may be required to be added to the brine concentrator and/or crystallizer system to minimize foaming in the brine streams as the wastewater is being processed. A 50-gallon tank will be used to store the anti-foam solution, and will be completely contained.

INSERT FIGURE 1.1-3R2, SITE PLAN (11 x 17)

INSERT FIGURE 1.1-5R, APPEARANCE OF THE SITE AFTER CONSTRUCTION LOOKING NORTH (ARTIST RENDERING)--**COLOR**

INSERT FIGURE 2.2-1R2, PLOT PLAN (11 x 17)

INSERT FIGURE 2.2-2R2, PLANT SOUTH ELEVATION (11 x 17)

INSERT FIGURE 2.2-6aR, Phase I – ANNUAL AVERAGE WATER BALANCE DIAGRAM

INSERT FIGURE 2.2-6bR, Phase I – ANNUAL AVERAGE WATER BALANCE DIAGRAM

Insert Figure 2.2-7, ZLD Process Flow Diagram (11 x 17)

3.0 ANALYSIS OF NEW ARRANGEMENT

This section addresses potential impacts resulting from the construction of Phase 1 of the plant incorporating a ZLD system. In addition, mitigation measures are included, if necessary, to reduce the nature or type of impacts below the level of significance.

3.1 Air Quality

Since there are no emissions associated with the ZLD system, no changes to the air quality analysis (as provided in the AFC, and amended in Supplements A and B) are needed.

3.2 Biological Resources

Adding the ZLD system to the plant would have no additional effect on biological resources, as discussed in the AFC, since the plant footprint would remain unchanged. Running additional water cycles through the Cooling Tower will increase the TDS in the cooling tower drift. The increased salt deposition from cooling tower drift will not adversely affect the most sensitive plant species.

3.3 Cultural Resources

Adding the ZLD system to the plant would have no additional effect on cultural resources as discussed in the AFC, since the plant footprint would remain unchanged.

3.4 Land Use

Adding the ZLD system to the plant would have no additional effect on land use as discussed in the AFC, since the plant footprint would remain unchanged.

3.5 Noise

The noise modeling performed in the AFC was rerun to determine if the addition of the ZLD equipment would adversely affect the noise contours provided in Supplement A to AFC. The modeling results indicated that the ZLD addition would result in a very slight increase (on the order of 0.5 dBA) in overall plant noise levels. However, it was noted at the June 11, 2002, workshop that the STG condensers were the nosiest pieces of equipment at the plant site. Therefore, additional noise control measures were added to the plant.

Modeling was run assuming the placement of barrier walls/cladding on the west and south sides of the steam turbine condenser areas, combined with moderate (achieving a minimum of 5 dBA noise reduction) HRSG stack silencers. The modeling indicated that the noise reduction from the condenser areas in the direction of the noise-sensitive receivers was 8 to 10 dBA. Consequently, the implementation of these additional measures would both offset the ZLD addition and result in a further decrease of overall plant noise levels. Based on the modeling results, noise levels at R2 are predicted to be 40 dBA. Noise contours showing the modeling results are provided as Figure 8.5-2R2. The modeling data is presented as Exhibit NO-1.

3.6 Public Health

Adding the ZLD system to the plant has no impact on air emissions. Therefore, no changes to the public health analysis are needed.

3.7 Worker Health and Safety

Construction impacts would be the same regardless of the location or type of equipment. Therefore, the AFC adequately addressed worker health and safety issues.

3.8 Socioeconomics

Adding the ZLD system to the plant would only create a minor increase in workforce requirements. No impacts to other Socioeconomic issues, as discussed in the AFC, would occur.

3.9 Agriculture and Soils

Adding the ZLD system to the plant would have no additional effect on agriculture and soils as discussed in the AFC, since the plant footprint would remain unchanged.

3.10 Traffic and Transportation

Adding the ZLD system to the plant would have only a minor increase in construction traffic from delivery of the equipment and the additional construction workers required to install the equipment.

Operation of the ZLD system will require additional truck traffic. There will be a minor increase in the volume of chemicals used and approximately, one dump truck load of salt cake will be required to be transported every other day to the local landfill.

3.11 Visual Resources

Adding a ZLD system to the CPP plant would not create any additional impacts from those discussed in the AFC. When comparing the revised simulation (see attached simulation, Figure 8.11-3bR2) to the simulation included in the AFC, there are some noticeable differences when viewed side-by-side. However, the effects on the view from KOP 2, as shown in the attached revised simulation, would be virtually the same as those presented in the AFC. Therefore, the visual impacts on the view from KOP 2 resulting from the addition of a ZLD system would remain adverse but not significant.

SMUD has committed to work with the nearby property owner to discuss relocation options for the residence that is located at KOP 1, eliminating the sensitive receptor that was closest to the project site. Therefore, a simulation showing the project with a ZLD system from the KOP 1 viewpoint was not prepared. A simulation showing the project with a ZLD system from KOP 3 was not prepared because the visual effects illustrated in the KOP 2 simulation would be generally representative of the view from KOP 3.

It is acknowledged that the view from KOP 3 is substantially farther than the view from KOP 2, therefore, project features, as seen from KOP 3, would appear smaller and more distant than what is shown in the simulated view from KOP 2. The visual effects at KOP 3 from the addition of the ZLD system may be less noticeable than the changes noticed at KOP 2 due to the distance between the sensitive receptor and the plant site.

3.12 Hazardous Materials Handling

Adding the ZLD system to the plant would increase the quantities used of the following chemicals previously discussed in the AFC:

- Sodium hydroxide (for caustic injection to Cooling Tower blowdown) – a 50 percent solution of this material was already planned to be used onsite for pH adjustment for the circulating water system. It was to be stored in a maximum quantity of 600 gallons, in two 300-gallon totes (one per cooling tower). RO is not anticipated for the ZLD, but if it was incorporated into the design, it will require a third tank of approximately 300 gallons of sodium hydroxide to be stored and used at the site. The new tank would be located in the same secondary containment basin as the totes.
- Sulfuric acid (for pH adjustment) – the AFC identified this material for control of cooling tower alkalinity and identified the maximum quantity to be stored onsite as 600 gallons (i.e., two 300-gallon totes, one per cooling tower). Use of a ZLD system will not significantly increase the maximum amount of sulfuric acid to be stored onsite. The storage location for the material will be near the cooling tower circulating water pumps in secondary containment. The sulfuric acid storage area was described in the AFC.
- Sodium carbonate (regeneration of weak acid cation system) – this material was identified in the AFC for chemical cleaning of the HRSG and for neutralization. It was to be onsite in a quantity of 500 pounds initially and then brought onsite every 3 to 5 years after startup for periodic maintenance. If an RO system is incorporated into the ZLD, this material would be onsite on a continuous basis.

In addition, the ZLD system would introduce the use of the following new chemicals at CPP:

- Scale inhibitors – 400 gallons (see section 2.1.3.2 for storage information)
- Sodium chloride (used only if RO is incorporated into ZLD system, regeneration of mixed bed demineralizer) – amount needed on-site has not been determined at this time.
- Calcium sulfate (for initial startup of brine concentrator) – 8,000 lbs, mixed in 50 gallon drum (during startup only)
- Anti-foam (for brine concentrator to control foaming) - 50 gallons

- Chelating agents (for cleaning of brine concentrator) - 100 gallons (used once per year for maintenance

For completeness, AFC Tables 8.12-2, 8.12-3 and 8.12-5 have been revised to include these chemicals. The revised tables (Tables 8.12-2, 8.12-3R and 8.12-5R)are located at the end of this section.

The effect of the proposed changes does not alter the conclusions presented in Section 8.12 of the AFC. The impacts of adding a ZLD system are consistent with those impacts previously identified in the AFC.

3.13 Waste Management

Adding the ZLD system to the plant would substantially reduce the amount of wastewater to be discharged, but increase the amount of solid waste generated by CPP. The ZLD system will recycle or evaporate wastewater from the plant and produce a concentrated non-hazardous solid waste residue (i.e., salt cake) from the brine concentrator/crystallizer. This dried waste will be disposed of in an offsite non-hazardous waste landfill, such as Forward Landfill.

Based on grab sample water quality data from Folsom-South Canal (see Table 7.1-2 in the AFC) the resulting salt cake is not expected to be hazardous. Analysis of a sample of the salt cake will be performed prior to disposal to demonstrate compliance with the disposal facility's waste acceptance criteria. Periodic re-testing will be performed on an as-needed basis.

During baseload operation, an average of 6.8 tons per day of this nonhazardous waste will be generated and transported to an offsite landfill for disposal.

The capacity of local non-hazardous waste disposal sites was analyzed for preparation of the AFC. This change will increase the amount of solid waste generated by CPP operations from approximately 80 tons per year to about 2,500 tons per year. However, as shown in AFC Section 8.13, Table 8.13-3, Forward Landfill is permitted to accept 6,680 tons per day and Kiefer Landfill 5,358 tons per day of solid waste. Therefore, an increase of 6.8 tons per day of solid waste to be disposed of at one of these sites will not have a significant impact on landfill capacity in the county.

No additional hazardous waste will be produced by the ZLD system. Additional hazardous materials used for regeneration and maintenance of the ZLD system will be consumed in the process and will not generate new solid or hazardous waste streams.

3.14 Water Resources

Adding the ZLD system to the plant would significantly change the water resources analysis provided in the AFC. Therefore, Section 8.14 of the AFC has been revised (in redline/strikeout) and is provided as Revised Section 8.14 to this supplement. This revised section will replace the text and water balance figures in the AFC in their entirety. In addition, the CEC has requested a figure showing the plant site and drainage on a topographic base map. This figure is attached as Figure 8.14-6.

3.15 Geologic Hazards and Resources

Adding the ZLD system to the plant would have no additional effect on geologic hazards or resources as discussed in the AFC, since the plant footprint would remain unchanged.

3.16 Paleontological Resources

Adding the ZLD system to the plant would have no additional effect on paleontological resources as discussed in the AFC, since the plant footprint would remain unchanged.

TABLE 8.12-2R
Location of Hazardous Materials

Chemical	Use	Storage Location
Aqueous Ammonia (29% NH_3 + 71% H_2O)	Selective catalytic reduction	Northeastern area of the site, just north of the raw water storage tanks and pumps
Sodium Hydroxide (NaOH) (e.g., Nalco 7383)	pH neutralization (if required) and caustic injection to cooling tower blowdown	Near cooling tower circulating water pumps
Sulfuric Acid (H_2SO_4)	Cooling tower alkalinity control (if required) and for ZLD ion exchange demineralizer regeneration	Near cooling tower circulating water pumps
Disodium Phosphate (Na_2HPO_4)	HRSG drum solids control	Water treatment building/laboratory
Trisodium Phosphate (Na_3PO_4)	HRSG drum solids control	Water treatment building/laboratory
Sodium Hypochlorite (NaOCL) (i.e., bleach)	Cooling tower biological control	Cooling tower chemical feed system
Sodium Tolytriazole (e.g., Nalco 8306 Plus)	Anti~~it~~scalant for use in cooling tower	Cooling tower chemical feed system
Stabrex ST70	Biocide in cooling tower	Cooling tower chemical feed system
NALCO 356 or NALCO TRIACT 1800	Corrosion control of condensate piping	Near main steam pipes of HRSG boilers
NALCO 7280	Antiscalant for use in RO unit	Water treatment building/laboratory
NALCO ELIMIN-OX	Oxygen scavenger for use in process feedwater to deaerator	Near each HRSG
NALCO 7408	Oxygen scavenger for use upstream of RO unit	Water treatment building/laboratory
NALCO 22106 or NALCO 7213	Chelate injected into suction of boiler feed pumps	Near each HRSG
Lubricating Oil	Rotating equipment	Contained within equipment, STG lube oil module, and CTG accessory module
Mineral Insulating Oil	Transformers/switchyard	Contained within transformers and switches
Citric Acid	Chemical cleaning of HRSG	Not stored – brought onsite once every 3 to 5 years
Hydrochloric Acid	Chemical cleaning of HRSG	Not stored – brought onsite once every 3 to 5 years
Hydroxyacetic Acid	Cleaning of HRSG feedwater system prior to initial startup	Not stored – used once
Formic Acid	Cleaning of HRSG feedwater system prior to initial startup	Not stored – used once
Various cleaning chemicals (e.g., ammonium biflouride, sodium carbonate, sodium nitrate)	Chemical cleaning of HRSG	Water treatment building/laboratory
Various laboratory reagents	Laboratory analysis	Water treatment building/laboratory

TABLE 8.12-2R
Location of Hazardous Materials

Chemical	Use	Storage Location
Scale Inhibitor	Antiscalant for use in ZLD Feed Tank	Near ZLD Feed Tank???
Anti-foam Solution	Control foaming in brine concentrator	Near brine concentrator
Calcium Sulfate	Brine concentrator initial startup seeding	Not stored – used for startup only
Chelating Agents (EDTA)	Brine concentrator cleaner	Water treatment facility
Sodium chloride	Regeneration of ZLD ion exchange demineralizers (22 to 26% liquid)	Water treatment facility
Sodium Carbonate	Regeneration of weak acid cation system	Near ZLD – used only if RO is included in final design

Note: Commercial brand names may be substituted with equivalent substances, pending supplier availability.

TABLE 8.12-3R
CPP Chemical Inventory for 1000 MW Facility

Trade Name	Chemical Name	CAS[a] Number	Maximum Quantity On-site	Hazardous Characteristics	CERCLA SARA RQ[b]	LaFollette Bill TPQ[c]	Prop 65
Acutely Hazardous Materials							
Aqueous Ammonia (29% solution)	Ammonium Hydroxide	1336-21-6 (for NH3 -H 2O)	1-18,000-gal. Tank, 15,000-gal. Solution, 33,000 lb. NH3	Corrosive Volatile	100 lb.	500 lb.	No
NALCO 356	Cyclohexylamine (20 to 40%) Morpholine (5 to 10%)	108-91-8 110-91-8	6,800 gal.	Corrosive	10,000 lb. d	10,000 lb. d	No No
NALCO TRIACT 1800	Cyclohexylamine (10 to 20%) Ethanolamine (10 to 20%) Methoxypropylamine (10 to 20%)	108-91-8 141-43-5 5332-73-0	6,800 gal.	Corrosive	100,000 lb. d d	10,000 lb. d d	No No No
Sulfuric Acid	Sulfuric Acid	7664-93-9	600 gal.	Corrosive	1,000 lb.	1,000 lb.	No
Hazardous Materials							
Bleach	Sodium Hypochlorite	7681-52-9	16,800 gal.	Corrosive	100 lb.	d	No
NALCO 7383	Sodium Hydroxide (50%)	1310-73-2	9~~6~~00 gal.	Corrosive	1,000 lb.	d	No
Disodium Phosphate	Sodium Phosphate	7558-79-4	1,900 lb.	Toxic	5,000 lb.	d	No
Trisodium Phosphate	Tri-Sodium Phosphate	7601-54-9	1,900 lb.	Toxic	5,000 lb.	d	No
NALCO 8306 Plus	Sodium Tolyltriazole	64665-57-2	10,000 gal.	Toxic	d	d	No
Hydrochloric Acid	Hydrochloric Acid	7647-01-0	100 gal.	Corrosive	5,000 lb.	d	No
Citric Acid	Hydroxy-propionic-tricarboxylic Acid	77-92-9	170 lb.	Corrosive	d	d	No
Hydroxyacetic Acid	Gyrolic Acid	None	170 gal.	Corrosive	d	d	No
Formic Acid	Methanoic Acid	64-18-6	170 gal.	Corrosive	5,000 lb.	d	No
STABREX ST70	Sodium Hydroxide (1 to 5%) Sodium Hypobromite (10 to 20%)	1310-73-2 13824-96-9	6,800 gal.	Corrosive/Toxic	1,000 lb.	d	No
NALCO 7280	Polyacrylic Acid (20 to 40%)	Trade Secret	840 gal.	Toxic	d	d	No
NALCO ELIMIN-OX	Carbohydrazide	497-18-7	6,800 gal.	Nonhazardous	None	None	No
NALCO 7408	Sodium Bisulfite (40 to 70%)	7631-90-5	840 gal.	Corrosive	5,000 lb.	d	No

TABLE 8.12-3R
CPP Chemical Inventory for 1000 MW Facility

Trade Name	Chemical Name	CAS[a] Number	Maximum Quantity On-site	Hazardous Characteristics	CERCLA SARA RQ[b]	LaFollette Bill TPQ[c]	Prop 65
NALCO 22106	Sodium Polyacrylate Aryl Sulfonate	N/A	6,800 gal.	Toxic	[d]	[d]	No
NALCO 7213	Tetrasodium ethylenedia-minetetraace-tate (10 to 20%)	64-02-8	3,400 gal.	Corrosive	[d]	[d]	No
Mineral Insulating Oil	Oil	None	274,000 gal.	Combustible	42 gal.[e]	[d]	Yes
Lubrication Oil	Oil	None	65,000 gal.	Flammable	42 gal.[e]	[d]	Yes
Ammonium bifluoride	Ammonium bifluoride	1341-49-7	200 lb. initially and once every 3 to 5 years	Corrosive/Toxic	100 lb.	[d]	No
Sodium carbonate	Sodium carbonate	497-19-8	500 lb. initially and once every 3 to 5 years; <u>if RO is included, then continuous</u>	Corrosive/Toxic	[d]	[d]	No
Sodium nitrate	Sodium nitrate	7631-99-4	500 lb. initially and once every 3 to 5 years	Toxic	[d]	[d]	No
<u>Calcium sulfate</u>	<u>Calcium sulfate</u>	<u>10101-41-4</u>	<u>8,000 lb.</u>	<u>Eye, skin, respiratory irritant</u>	<u>[d]</u>	<u>[d]</u>	<u>No</u>
<u>Scale Inhibitors (various)</u>	<u>Polyacrylate</u>	<u>Various</u>	<u>400 gal.</u>	<u>Corrosive/Toxic</u>	<u>[d]</u>	<u>[d]</u>	<u>No</u>
<u>Anti-foam (e.g., NALCO 71 D5 ANTIFOAM)</u>	<u>Hydrotreated light distillate (10-20%)</u>	<u>6742-47-8</u>	<u>50 gal</u>	<u>Eye and skin irritant</u>	<u>[d]</u>	<u>[d]</u>	<u>No</u>
	<u>n-Decanol (1-5%)</u>	<u>112-30-1</u>			<u>[d]</u>	<u>[d]</u>	<u>No</u>
	<u>n-Octanol (5-10%)</u>	<u>118-87-5</u>			<u>[d]</u>	<u>[d]</u>	<u>No</u>
<u>Chelating Agents</u>	<u>EDTA</u>	<u>60-00-4</u>	<u>100 gal.</u>	<u>Eye and respiratory irritant</u>	<u>5,000 lb</u>	<u>[d]</u>	<u>No</u>
Detergents	Various	None	340 gal.	Toxic	[c]		
Laboratory Reagents (liquid)	Various	None	40 gal.	Toxic	[c]		

TABLE 8.12-3R
CPP Chemical Inventory for 1000 MW Facility

Trade Name	Chemical Name	CAS[a] Number	Maximum Quantity On-site	Hazardous Characteristics	CERCLA SARA RQ[b]	LaFollette Bill TPQ[c]	Prop 65
Laboratory Reagents (solid)	Various	None	340 lb.	Toxic	[c]		

[a] CAS Chemical Abstract Service
[b] Reportable quantity per CERCLA. Release equal to or greater than RQ must be reported. Under California law, any amount that has a realistic potential to adversely affect the environment or human health or safety must be reported.
[c] Threshold Planning Quantity. If quantities of acutely hazardous materials equal to or greater than TPQ are handled or stored, they must be registered with the local Administering Agency.
[d] No reporting requirement.
[e] Must be reported if it does or will reach California state waters or if the quantity released is a "harmful quantity."

TABLE 8.12-5R
Toxicity of Hazardous and Acutely Hazardous Materials

Hazardous Materials	Physical Description	Health Hazard	Reactive & Incompatibles	Flammability[a]
Aqueous Ammonia	Colorless gas with pungent odor.	Corrosive: Irritation to permanent damage from inhalation, ingestion, and skin contact.	Acids, halogens, strong oxidizers, salts of silver and zinc.	Noncombustible in liquid form. Vapors are combustible, but difficult to burn.
Calcium Sulfate	White granules; odorless	May cause impaired sense of smell and taste, respiratory tract irritation, dermatitis and conjunctivitis	Diazomethane (vapor) and Phosphorous (red)	Non-flammable
Anti-Foam (e.g., NALCO 71 D5 Antifoam)	Clear, light yellow	Causes irritation to skin and eyes	Strong oxidizers (e.g., chlorine, peroxides, chromates, nitric acid, perchlorates, concentrated oxygen, permaganates)	Combustible
Chelating Agent (EDTA)	White powder, odorless	Dust may be irritating to eyes and mucous membranes	None specified	Non-flammable
Scale Inhibitors (various)	Yellow green liquid	Corrosive and Toxic: Slight to moderate toxicity. Irritation to skin and eyes.	Strong acids.	Non-flammable
Sodium Chloride	Colorless transparent crystals with no odor	No acute systemic, chronic systemic or chronic local toxicity. Ingestion of large quantities may cause vomiting.	Lithium and bromine trifluoride; concentrated nitric or sulfuric acids	Non-flammable
NALCO 356 Cyclohexylamine (20 to 40%) Morpholine (5 to 10%)	Clear, light yellow/green liquid.	Corrosive: Irritation to eyes and skin. Can cause kidney damage.	Strong oxidizers and acids. SO_2 or acidic bisulfite products.	Flammable.

TABLE 8.12-5R
Toxicity of Hazardous and Acutely Hazardous Materials

Hazardous Materials	Physical Description	Health Hazard	Reactive & Incompatibles	Flammability[a]
NALCO-TRI-ACT 1800 Cyclohexylamine (10 to 20%)	Clear, colorless to light yellow.	Corrosive: Irritation to eyes and skin. Can cause liver damage.	Strong acids, inorganic nitrites, or nitrous oxide.	Non-flammable.
Ethanolamine (10 to 20%)				
Methoxypropylamine (10 to 20%)				
Sulfuric Acid	Colorless, dense, oily liquid.	Strongly Corrosive: Strong irritant to all tissue. Minor burns to permanent damage to tissue.	Organic materials, chlorates, carbides, fulminates, metals in powdered form. Reacts violently with water.	Non-flammable.
Sodium Hypochlorite	Pale green; sweet, disagreeable odor. Usually in solution with H_2O or sodium hydroxide.	Corrosive and Toxic: Toxic by ingestion. Strong irritant to tissue.	Ammonia and organic materials.	Fire risk when in contact with organic materials.
Sodium Hydroxide (NALCO 7383)	Clear yellow liquid.	Corrosive: Irritant to tissue in presence of moisture. Strong irritant to tissue by ingestion.	Water, acids, organic halogens, some metals.	Non-flammable.
Disodium Phosphate	White powder.	Toxic: Toxic by ingestion.	None.	Non-flammable.
Trisodium Phosphate	Colorless crystals.	Corrosive and Toxic: Toxic by ingestion. Irritant to tissue.	None.	Non-flammable.
Scale Inhibitor (NALCO-8306 Plus) (Sodium Tolytriazole)	Yellow green liquid.	Corrosive and Toxic: Slight to moderately toxic. Irritation to skin and eyes.	Strong acids.	Non-flammable.
Hydrochloric Acid	Colorless, pungent, fuming liquid.	Strongly Corrosive and Toxic: Toxic by ingestion. Strong irritant to eyes and skin.	Metals, hydroxides, amines, alkalis.	Non-flammable.
Citric Acid	Translucent crystals.	None.	None.	Non-flammable.

TABLE 8.12-5R
Toxicity of Hazardous and Acutely Hazardous Materials

Hazardous Materials	Physical Description	Health Hazard	Reactive & Incompatibles	Flammability[a]
Hydroxyacetic Acid	Colorless crystals.	Corrosive and Toxic: Toxic by inhalation, ingestion, and dermal contact. Irritant to skin and tissue.	Strong bases, strong reducing and oxidizing agent.	Combustion is possible at elevated temperatures or if in contact with an ignition source.
Formic Acid	Colorless, fuming liquid.	Corrosive: Irritant to skin and tissue.	Strong oxidizers, strong caustics, concentrated sulfuric acid.	Combustible.
STABREX ST70	Clear, light yellow liquid.	Corrosive: Irritant to eyes and skin. Harmful if ingested or inhaled.	Strong acids.	Non-flammable.
Sodium Hydroxide (1-5%)			Organic materials.	
Sodium Hypobromite (10-20%)			Sodium hypochlorite.	
NALCO 7280 Polyacrylic Acid	Clear to slightly turbid yellow.	Toxic: Kidney damage. May cause bone fragility.	Reactive salts (nitrites and sulfites).	Non-flammable.
ELIMIN-OX Carbohydrazide	Colorless liquid.	Slightly Toxic: Low human hazard.	Mineral acids, nitrites, and strong oxidizers.	Non-flammable.
NALCO 7408 Sodium Bisulfite	Yellow liquid.	Corrosive: Irritation to eyes, skin, and lungs. May be harmful if digested.	Strong acids and oxidizers.	Non-flammable.
NALCO 22106 Sodium Polyacrylate Aryl Sulfonate	Clear to slightly yellow.	Toxic: Possibly harmful if swallowed.	None known.	Non-flammable.
NALCO 7213 Tetrasodium Ethylenediaminetetraa ce-tate (10-20%)	Clear, yellow to amber.	Corrosive and Toxic: Moderate irritation to eyes and skin. Moderate toxicity.	Strong acids.	Combustible.
Ammonium biflouride	White crystals.	Corrosive and Toxic: Caustic poison and strong irritant.	None.	Non-flammable.

TABLE 8.12-5R
Toxicity of Hazardous and Acutely Hazardous Materials

Hazardous Materials	Physical Description	Health Hazard	Reactive & Incompatibles	Flammability[a]
Sodium carbonate	White crystals or powder.	Corrosive and Toxic: Mildly toxic. Irritation to eyes and skin.	Aluminum, Phosphorus (V), Oxide, Sulfuric Acid, Fluorine, Lithium, 2, 4, 6-trinintrotoluene.	Non-flammable.
Sodium nitrate	Colorless crystals.	Toxic: Mildly toxic by ingestion.	Acetic Anhydride, Aluminum Powder, Antimony Powder, Barium Thiocyanate, Cyanides, Bitumen, Born Phosphide, Magnesium, Metal Amidosulfates, Organic Matter, Perosyformic Acid, Sodium Hypophosphate, Wood.	Non-flammable.
Laboratory Reagents	Liquid and solid.	Refer to individual chemical labels.	Refer to individual chemical labels.	Refer to individual chemical labels.
Mineral Oil	Oily, clear liquid.	Minor health hazard.	Sodium hypochlorite.	Can be combustible depending on manufacturer.
Lubrication Oil	Oily, dark liquid.	Hazardous if ingested.	Sodium hypochlorite.	Flammable.

Data was obtained from Material Safety Data Sheets (MSDSs) and "Hazardous Chemical Desk Reference, 2nd Edition," by Richard J. Lewis, Sr., 1991.
A Per Department of Transportation regulations, under 49 CFR 173: "Flammable" liquids have a flash point less than or equal to 141°F; "Combustible" liquids have a flash point greater than 141°F.

INSERT EXHIBIT NO-1

INSERT FIGURE 8.5-2R2, Revised Noise Contours (11 x 17)

INSERT FIGURE 8.11-3bR2, KOP 2: Simulated View of Project Using ZLD—11 x 17 **COLOR**

INSERT FIGURE 8.14-6, Site Topography and Drainage (11 x 17)

4.0 WATER USE ALTERNATIVES FOR PHASE 2

SMUD agrees with the CEC staff that freshwater use in power generation can be minimized. Accordingly, SMUD has modified its proposed CPP project to include a zero-liquid discharge (ZLD) system, in lieu of the freshwater discharge initially proposed. This Supplement C analyzes the impacts and benefits associated with such a ZLD system, which will allow SMUD to recycle the cooling water in the most efficient way possible.

SMUD is also committed to incorporating a source of reclaimed water, if feasible, or otherwise mitigating the use of freshwater, for the second phase of CPP. Over all, SMUD expects that its total freshwater needs for the CPP will be approximately 5,300 acre-feet per year (AFY), rather than the 8,000 AFY initially proposed in the AFC. Beyond the current AFC application, SMUD regards the Rancho Seco site as the Sacramento area's preferred long-term power generation site because land, transmission and water are all available.

4.1 Future Water Use Alternatives

Before proceeding with CPP Phase 2, SMUD will submit to the CEC an analysis of the following options to minimize the freshwater use at the Rancho Seco site and/or throughout the basin by the use of appropriate technology and/or the use of reclaimed water.

4.1.1 The Sacramento Regional Wastewater Treatment Plant

The Sacramento Regional Wastewater Treatment Plant (SRWTP) is located about 26 miles from CPP, and is located in the vicinity of SMUD's current natural gas pipeline terminus. The proposed natural gas pipeline extension to CPP would be installed in current utility corridors where possible, and would cross several streams and rivers. Because several of these corridors are congested and there would be substantial costs associated with multiple bores underneath sensitive habitat, SMUD believes that it would not be feasible to incorporate reclaimed water from SRWTP into the project. Nonetheless, SMUD will explore this option further.

4.1.2 Galt Wastewater Treatment Plant

A preferred alternative is the Galt Wastewater Treatment Plant (GWTP), which is approximately 17 miles from CPP, and is located on the west side of the Highway 99 on Twin Cities Road. Discussions with GWTP staff indicate there is an average of 2 million gallons a day (MGD) of secondary effluent. The effluent typically fluctuates from 1.8 MGD to 2.1 MGD. Full build-out of the plant is 3 MGD, and is about 5 years away, if the pace of residential construction continues. If the City of Galt approves plans to expand the construction allowed in the city, the plant capacity could be doubled; however, this is not expected to take place for several years. Currently though, GWTP has indicated that secondary effluent could be available for future CPP build-out. Since Title 22 reclaimed water is more desirable for CPP, any plans to accept GWTP may include treating the water to Title 22 standards.

The proposed gas line project calls for installing the 24-inch natural gas pipeline along 3 miles of Twin Cities Road, between the road and the railroad tracks. Biological and cultural surveys indicate this is a suitable route for pipeline installation. This corridor appears to be wide enough to allow proper separation between the gas pipeline and a new reclaimed water pipeline. Based on these factors, SMUD believes that this route may be suitable for installing a water pipeline at a future date, unlike the pipeline corridor between SRWTP and CPP, which is quite narrow in places.

Therefore, SMUD proposes to undertake a CEQA-equivalent study during design and development of the second CPP phase to determine the impacts associated with using reclaimed water from GWTP. This water would be used to supplement the reliable source of Folsom-South Canal proposed for CPP.

4.1.3 Groundwater Reclaim

SMUD recognizes the potential benefits to the area by supporting the recharge of basin aquifers. A possible offset to using freshwater for the second phase of the CPP would be to financially support a proposal to bring reclaimed water to a potential recharge site. Meetings have been held with the SRWTP regarding co-locating a reclaimed water line with part of the East Bay Municipal Utility District (EBMUD) pipeline from the Sacramento River to the Folsom South Canal.

4.1.4 Convert Other Fresh Water Users to Reclaimed Water

SMUD supports finding other means to displace the use of freshwater. An example is the proposal to offset CPP freshwater by switching the supply of freshwater to another SMUD power plant. Discussions have taken place with the SRWTP regarding this option.

Another example would be to convert certain agricultural users from freshwater to reclaimed water. SMUD will consider supporting the SRWTP in its efforts to build suitable facilities to accomplish this.

4.2 Conclusion and Recommendation

The Preliminary Staff Assessment (PSA) should recommend the following conditions related to water use:

1. ZLD should be required for construction and operation of CPP Phase 1.
2. Before SMUD begins construction of CPP Phase 2, SMUD shall submit an analysis of incorporating a source of reclaimed water, if feasible, or otherwise mitigating the use of freshwater for Phase 2.

REVISED AFC SECTION 8.14

Please replace Section 8.14 in Volume 1 of the AFC with the attached section.

Also replace Figures 8.14-3a, 3b, 3c and 3d in Volume 1 of the AFC with the attached figure

8.14 Water Resources

8.14.1 Introduction

This section evaluates the effects of the CPP project on water resources. Section 8.14.2 discusses the laws, ordinances, and regulations pertaining to water resources and project conformity. Section 8.14.3 describes the hydrologic setting, and Section 8.14.4 discusses proposed water use and disposal, precipitation, storm runoff, and drainage. Section 8.14.5 discusses the project's effects on water resources. Mitigation is discussed in Section 8.14.6. Section 8.14.7 provides the proposed monitoring plans and compliance verification procedures. Section 8.14.8 discusses cumulative impacts. Section 8.14.9 lists the permits required, and Section 8.14.10 provides agency contacts. Section 8.14.11 provides the references consulted in preparing this section.

Water resources potentially affected by the proposed CPP project include effects on water supply, surface and groundwater water quality, and stormwater and flood hazards. The following water resources impacts were investigated:

- Effects on surface waters
- Effects on groundwater recharge, degradation, or depletion
- Stormwater impacts
- Flooding impacts

8.14.2 Applicable Laws, Ordinances, Regulations, and Standards

Federal, state, county, and local LORS applicable to water resources and conformance are discussed in this section and summarized in Table 8.14-1.

8.14.2.1 Federal

CWA authorizes USEPA to regulate discharges of ~~wastewater and~~ stormwater ~~into surface waters~~ by complying with the General Order for Stormwater Discharges ~~issuing NPDES permits setting pretreatment standards. RWQCBs implement these permits at the state level, but USEPA may retain jurisdiction at its discretion~~. The CWA's primary effect on the CPP is with regard to the control of soil erosion during construction and the need to prepare and execute site-specific erosion control plans and measures for the construction of each project element that will entail the physical disruption or displacement of surface soil. In addition, Section 404 of the CWA regulates wetland fill~~disturbance~~ and provides guidance on crossing waterways. The U.S. Army Corps of Engineers administers Section 404 permits for fill.

8.14.2.2 State

State LORS applicable to this project include CEQA, Central Valley Regional Water Quality Control Board (CVRWQCB) administration of stormwater permits, and CDFG administration of the streambed alteration-agreement~~permitting programs~~.

TABLE 8.14-1
Laws, Ordinances, Regulations, and Standards Applicable to CPP Water Resources

LORS	Applicability	How Conformance is Achieved	Agency/Contact
Federal			
CWA as implemented by the CVRWQCB	Regulates stormwater discharge by issuing Construction Activity NPDES Stormwater Permit	Section 8.14.5.1: NPDES permits for construction stormwater. Required prior to construction and plant operation.	CVRWQCB Leo Sarmiento (916) 255-3049
	General Industrial Stormwater Permit	Section 8.14.5.1: NPDES permits for industrial stormwater. Required prior to construction and plant operation.	CVRWQCB Sue O'Connell (916) 255-3000
CWA Section 401	Water Quality Certification	Section 8.14.5.1: Requires water quality certification for any Section 404 permit; delegated to CVRWQCB.	CVRWQCB Patricia O'Leary (916) 255-3000
CWA Section 404	Wetlands disturbance	Section 8.14.5.1: Section 404 permit for work in jurisdictional wetlands. Required prior to any work below the high water mark of the creek.	USACOE Nancy Haley U.S. Army Corps of Engineers (916) 557-7772
State			
State Water Resources Control Board	Regulates stormwater discharge	Section 8.14.5.1: NPDES permits for construction -and industrial stormwater. Required prior to construction and plant operation.	CVRWQCB Leo Sarmiento (916) 255-3049
California Water Code 13550 *et seq.* And Resolution 75-58	Encourages reuse of water for beneficial use	Section 7.0: AFC demonstrates that ocean, brine, wastewaters, and other sources are not feasible for current project.	Paul Lillebo Environmental Specialist IV (916)341-5551
CDFG (Fish and Game Code, Section 1601)	Issues Streambed ~~A~~alteration ~~A~~agreement for projects affecting "streams".	Section 8.14.5.1: 401 permit for work affecting surface water. Required prior to any work below the high water mark of the creek.	Dale Whitmore Gary Hobgood CDFG Streambed Alteration Agreements (916) 983-5162
Local			
Sacramento County Grading Ordinance	Permits Grading, Erosion and Sediment Control Sacramento County Ordinance 16.44 (Part of General Improvement Plan)	Section 8.14.5.1: Requires erosion and sediment control plan, drainage control features and county approval. Required prior to site grading. Application also comprises CEQA, Geotechnical Report, and Erosion and Sediment Control Plan.	Tony Do Sacramento County Land Division and Site Improvement Review (LD&SIR) (916) 874-5809

California Environmental Quality Act

CEQA requires that projects approved by state agencies be evaluated for their potential to cause adverse environmental impacts, and that impacts be mitigated to the extent feasible and applicable. The CEC meets the requirements of CEQA through the CEQA-equivalent AFC process.

State Water Resources Control Board and Central Valley Regional Water Quality Control Board

The CVRWQCB requires a N~~n~~otice of I~~i~~ntent to be filed prior to construction activities. Stormwater Pollution Prevention Plans (SWPPPs) must be prepared prior to filing both the Construction and General Industrial Stormwater NPDES permits. The State Water Resources Control Board (SWRCB) Water Quality Order No. 99-08-DWQ regulates~~applies to~~ erosion control measures for sites greater than 5 acres, to comply with ~~construction activity~~ NPDES stormwater permits.~~ for construction areas of greater than 5 acres.~~ SWRCB Order 97-03-DWQ authorizes general industrial stormwater permits for stormwater runoff during operation of an industrial site.

California Water Code Section 13550, 13551, 461, and SWRCB Resolution No. 75-58

These water code sections and policy statements encourage the conservation of water resources and the maximum reuse of wastewater, particularly in areas where water is in short supply.

Fish and Game Code Section 1601 Streambed Alteration Agreement (SAA)

Section 1601 of the Fish and Game Code requires a State or local governmental agency or public utility to notify the Department before it begins a construction project that will: 1) divert, obstruct, or change the natural flow or the bed, channel, or bank of any river, stream, or lake; 2) use materials from a streambed; or 3) result in the disposal or deposition of debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into any river, stream, or lake. ~~The CDFG requires a Streambed Alteration Agreement for actions that would disturb bed and banks of surface streams.~~ Because of the chance of a "frac out," an SAA may be required even for~~this includes~~ streams that are avoided by trenchless construction such as HDD. A "frac out" is the term for pressurized drilling muds bursting to the surface through surface fractures, with potential adverse impacts to surface resources.

Water Quality Certification

Section 404 permits issued by the U.S. Army Corps of Engineers for wetland fill, require a Water Quality Certification (Section 401) permit issued by CVRWQCB.

8.14.2.3 Local Policies

Local ordinances focus on flood control concerns, stormwater protection, and erosion control as well as use of reclaimed water for cooling. The Sacramento County General Plan specifies policies listed in Table 8.14-2. The project conformance with these policies is also provided.

8.14.3 Hydrologic Setting

The climate in the project area is typical of the Central Sacramento Valley with hot, dry summers and mild winters. Daytime temperatures during the summer months range between 80°F and 100°F, with peak days reaching temperatures as high as 110°F. The rainy season generally extends from November through March. Occasional rains occur during the spring and fall months, but summer months are dry. Average annual precipitation is about 12 inches. Total elevation range on the site is from 140 to 160 feet.

The project site is located in the southeast portion of Sacramento County. Surrounding land is predominantly grazing land, vineyards, and scattered rural houses. The foothills of the Sierra Nevada lie approximately 15 miles to the east.

TABLE 8.14-2
General Plan Policies Applicable to Water Resources and Conformance of CPP Project

Element	Goal/Policy	Conformance
Sacramento County General Plan		
Conservation – Water Resources	CO-7: Divert surface water only when flows are sufficient to maintain minimum flows consistent with the EBMUD Court ruling of: - 2,000 cfs October 16 through February - 3,000 cfs March through June - 1,750 cfs July through October 15 in the Lower American River between Nimbus Dam and its confluence with the Sacramento River.	USBR contract provides diversions consistent with agreements of EBMUD water use.
	CO-18: Work with area purveyors to investigate and implement a conjunctive use program between groundwater and surface water supplies, consistent with meeting the in-stream flow requirements of the American River.	Project would not use groundwater and, therefore, would not contribute to overdraft.
	CO-30: Locate septic systems outside of primary ground water recharge areas, or if that is not possible, require the use of shallow leaching systems for disposal of septic effluent.	Project would dispose to shallow leachfield or package treatment system consistent with protection of groundwater resources.
Water Conservation	CO-39: Development project approvals shall include a finding that all feasible and cost effective options for conservation and water reuse are incorporated into project design. Wastewater reuse options shall be reviewed and agreed upon by the area water purveyor when the reclaimed water is to be used within the water purveyor's business.	Water would be recycled to the extent feasible~~,~~. ~~consistent with maintaining discharge water quality, such that downstream beneficial uses are not adversely affected.~~

Source: Sacramento County General Plan (1997).
EBMUD East Bay Municipal Utilities District

The Folsom-South Canal and Rancho Seco Reservoir are the major surface water features in the vicinity. Water from the canal is used to maintain levels in the Reservoir and its surrounding environmental habitat, and is cycled through the Rancho Seco ~~nuclear facility~~Plant and discharged to Clay Creek. A more detailed description is provided below.

8.14.3.1 Surface Water

Surface waters in the project area include Folsom-South Canal, Rancho Seco Reservoir, Clay Creek, Hadselville Creek, and various unnamed tributaries to these waters. Local surface water features are shown in Figure 8.14-1.

Folsom-South Canal

Folsom-South Canal is a 26.98-mile conveyance facility, owned and operated by the U.S. Bureau of Reclamation (USBR) as part of its Central Valley Project. It originates at Lake Natoma on the American River in eastern Sacramento, and carries water south to the Rancho Seco Plant. When the Folsom-South Canal was constructed, USBR's~~the Reclamation's~~ original plan was to extend the canal farther south to a final length of 55.8 miles. However, this additional construction was never completed, so the canal terminates at Rancho Seco Plant, and SMUD is the primary user of this facility. Presently, the canal is generally straight, trapezoidal, concrete-lined, and fenced on both sides. Water quality in the canal reflects water quality of the American River and is described in detail in Chapter 7.0.

Rancho Seco Reservoir

Rancho Seco Reservoir is located 0.25 mile east of the project site. It is a small reservoir constructed on an unnamed tributary to Clay Creek that dominates the 433-acre recreational facility called Rancho Seco Park. The source water for Rancho Seco Reservoir initiates from a small upstream drainage area, but principally from water diversions from the Folsom-South Canal. Water is regularly discharged from the Rancho Seco Reservoir dam spillway to maintain riparian vegetation downstream of the dam. Rancho Seco Reservoir was originally developed to provide an emergency backup water supply for cooling the Rancho Seco Plant and to provide water for fire control if necessary. As part of the agreement to construct and operate Rancho Seco Plant, SMUD ~~agreed to~~ operates Rancho Seco Reservoir as a public park.~~ for 50 years.~~ The park is open to the public year round for swimming, fishing, and camping. Electric motorboats, rowboats, and sailboats are allowed on the lake. The lake is planted with bass, bluegill, catfish, and trout and is a popular fishing destination.

Clay Creek, Hadselville Creek, Laguna Creek, Cosumnes River

Clay Creek flows from east to west, approximately 0.1 mile north of the project site. The Creek has several branches in the project vicinity; it was diverted and changed as a result of construction of the mining operation east of the site, Rancho Seco Reservoir east of the site, and the Rancho Seco Plant north of the site. It appears that the drainage that crosses the northeast corner of the site is one of four primary drainages that meet their confluence in Clay Creek 0.1 mile north of the site. The four drainages, from north to south originate from: A) the southeast corner of the Rancho Seco Plant; B) the main surface drainage that was dammed to form Rancho Seco Reservoir; C) the underground pipeline from Rancho Seco Reservoir to the Rancho Seco Plant and Clay Creek; and D) a side channel from the mine tailings that branches off the main surface drainage from Rancho Seco Reservoir.

Flows in these drainages are seasonal, ~~probably~~ consisting ~~only~~ of winter rainfall and periodic spillage from Rancho Seco Reservoir. The drainages were dry in April and May of 2001 during field surveys. Perennial flow in Clay Creek usually originates west of the project site where wastewater from the Ranch Seco Plant discharges into Clay Creek at a rate of 13 mgd. The discharge contains stormwater, irrigation runoff, processed radioactive water, treated domestic wastewater from the power plant site, ~~heating tower blowdown,~~ and dilution water from the Folsom-South Canal.

Clay Creek flows into Hadselville Creek approximately two miles west of the project. Hadselville Creek in turn flows into Laguna Creek approximately 2 miles further downstream. Laguna Creek flows southwesterly for approximately 9 miles until it reaches the confluence of the Cosumnes River. The Cosumnes River is the last large un-dammed river in the Central Valley, flowing at around 2,000 cubic feet per second (cfs) most of the year but up to 35,000 cfs during storm events. The channel is natural, meandering, and bordered by extensive riparian vegetation on both sides. Three miles downstream of the confluence of Hadselville and Laguna Creeks is the eastern boundary of the Cosumnes River Preserve. The Cosumnes River flows into the Mokelumne, which joins the Sacramento-San Joaquin Delta near Antioch. In this way, Clay Creek is a contributor to the beneficial uses of the Delta.

The beneficial uses of Clay Creek, Hadselville Creek, Laguna Creek, Cosumnes River, and the Sacramento-San Joaquin Delta are municipal, industrial, and agricultural supply; recreation; aesthetic enjoyment; groundwater recharge; freshwater replenishment; and preservation and enhancement of fish, wildlife, and other aquatic resources (RWQCB, 1997).

The California Department of Fish and Game (CDFG) has verified that the fish species present in the Cosumnes River are consistent with both cold and warm water fisheries, and that there is a potential for anadromous fish migration implying beneficial uses for both cold and warm water habitat.

In areas where groundwater elevations are below the stream bottom, water from the stream will percolate to groundwater. Since Clay Creek, Hadselville Creek, and Laguna Creek may be dry at times, it is reasonable to assume that the stream water is lost by evaporation, flow downstream, and percolation to groundwater.~~, providing a source of municipal and irrigation water supply.~~

8.14.3.2 Groundwater

Groundwater at the site was described in the Draft EIR for Rancho Seco Park Master Plan (SMUD, 1994) as follows:

The site is found in the Pliocene Laguna Formation and is underlain by 1,500 to 2,000 feet of Tertiary or older sediments, which were deposited on a basement complex of granitic to metamorphic rocks. Groundwater in the area is present under free or semiconfined conditions as a part of the Sacramento Valley groundwater basin. Water is stored primarily in the Mehrten Formation. The sand and gravel zones of this formation are heavily used in Sacramento County. As of 1994, overdraft was increasing at an average 0.5 foot per year. Overdraft was most severe around Galt and Elk Grove. As of 1991, groundwater under the site had been dropping approximately 2 feet per year since 1976, with potable water present at depths of 230 to 350 feet. (SMUD, 1991 *in* SMUD, 1994). Recent agreements by the

Sacramento Water Agency implemented through the water forum are addressing the overdraft by shifting County water use to surface water sources.

Sustained yield is defined by the amount of groundwater that can be withdrawn without lowering groundwater levels. Sustained yield for the Folsom-South service area, including Galt Irrigation District, Omochumne, and other south service subareas is 215,000 acre-feet per year (AFY) (Sacramento County, 1992 *in* SMUD, 1994).

Few portions of Sacramento County have high infiltration capacity. These include recharge areas generally existing along active large stream channels with sands and gravels. Some areas along Clay Creek have moderate recharge capability, but most of the area is characterized as having poor recharge capability because of clay or hardpan soils. (Sacramento County, 1992 *in* SMUD, 1994).

Rancho Seco Park gets domestic water from an onsite well. The well supplies a demand of approximately 600 gpd (Psomas and Associates, 1993 *in* SMUD, 1994).

Groundwater quality at the site is generally good and within federal and state limits for drinking water. Water is sodium bicarbonate type with low total dissolved solids (<200 mg/L), hardness less than 50 mg/L and iron and manganese less than 0.3 mg/L (SMUD file data *in* SMUD, 1994). There are no reports of contamination or other water quality problems at the site. Groundwater contamination is unlikely because lack of urbanization east of the site (upgradient) and poor soil permeability effectively prevent substantial migration of contaminants. Beneficial uses of groundwater underlying the project site are municipal, industrial, and agricultural supply.

Septic disposal systems and leach fields are potential sources of nitrates into groundwater; therefore, these are approved based on local soil conditions and the potential for contamination. Sacramento County has a policy of replacing septic systems on parcels of less than 5 acres that are found to cause increasing nitrate levels. The only septic treatment systems in the vicinity of the project are the Rancho Seco waste water ponds, located near the east end of Rancho Seco Reservoir, and the Rancho Seco Plant wastewater system, which is an overland flow system, located 0.25 mile downstream of the project.

8.14.3.3 Flooding Potential

FEMA Flood Insurance Rate Maps (FIRM) show that the northern boundary of Rancho Seco Park CPP is inside the 100-year flood boundary that borders Hadselville Creek (FEMA 1980). The CPP project site is outside the 100-year flood boundary (Figure 8.14-2). The proposed gas line for the project crosses through the 100-year floodplain in many locations.

<u>At the request of CEC staff, SMUD prepared site-specific flood plain modeling to determine the maximum potential elevation of the water in a 100-year flood event. This information and mapping was provided to the CEC under a separate data response.</u>

There are no tsunami run-up or seiche zones in the project area.

8.14.4 Water Use and Disposal

The water used and disposed of is diagramed in Figures 8.14-3a<u>R</u>, <u>3</u>b<u>R</u>, <u>3</u>c<u>R</u>, and <u>3</u>d<u>R</u>.

The CPP project would use approximately 5~~8~~,000 AFY of water provided from the Folsom-South Canal, which conveys water from the American River, at Lake Natoma. The water supply is discussed in detail in Section 7.0. The source of water supply, rationale for its selection, water quality, and water balance diagrams are detailed in Section 7.0. Wastewater disposal is described in detail here.

Wastewater from the facility falls within three general categories: 1) The greatest volume is cooling water, comprising cooling tower blowdown and process water that will be disposed in a brine concentrator and crystallizer, resulting in a salt cake product;~~. of in Clay Creek as authorized by NPDES permit.~~ 2) A relatively small amount of sanitary wastewater (< 1 AFY) comprising wastewater from toilets, showers, and washdown water will be discharged to an on-site packaged waste treatment system and leach field;~~.~~ 3) Stormwater from the site will be conveyed by sheet flow to area drains leading ~~to a detention pond located north of the project and south of~~ to Clay Creek. The following sections provide additional details.

8.14.4.1 Cooling Tower Blowdown

The circulating water system blowdown, including water from the Folsom-South Canal, various process waste streams, and residues of antiscalants and anti-biofouling chemicals will be processed to a dry salt cake product . ~~discharged through a 14-inch pipe to Clay Creek, approximately 100 feet north of the project site. Water will be adjusted to a pH ±Δ 0.5 of the makeup pH with sulfuric acid (if required), de-chlorinated, and checked for temperature, TDS, and chlorine prior to discharge into Clay Creek, according to the requirements of an NPDES permit. Table 8.14-3 presents the estimated quality of water that would be discharged. The estimated water quality meets all anticipated numbered criteria with the exception of copper. Supply water contains an estimated 19 mg/L of copper, which after treatment effluent would contain 10 mg/L, a net benefit to beneficial uses of the waterway. An application for the NPDES discharge is included in Appendix 8.14A of this AFC.~~ The estimated quality of cooling tower drift can be found in Table 8.14-4.

TABLE 8.14-4
Estimated Quality of Cooling Tower Drift

Constituent/Parameter	Cooling Tower Drift
Flow (gpm)	1.4
Cations (mg/L)	
Calcium	75
Magnesium	18
Sodium	28
Potassium	13
Ammonium	1

TABLE 8.14-4
Estimated Quality of Cooling Tower Drift

Constituent/Parameter	Cooling Tower Drift
Anions (mg/L)	
Bicarbonate	328
Carbonate	13
Hydroxide	0
Sulfate	18
Chloride	17
Nitrate	0
Phosphate	0
Other (mg/L)	
Total Hardness	250
Total Alkalinity (as $CaCO_3$)	280
TSS	NA
Silica	120
Carbon Dioxide	9.5
PH	8.7
TDS	470
Metals/Misc. (µg/L)	
Fluoride	10
Arsenic	5.0
Barium	160
Beryllium	5.0
Boron	230
Cadmium	1.0
Chromium	23
Copper	190
Iron	990
Lead	28
Manganese	22
Mercury	0.5
Nickel	10
Silver	1.0
Selenium	5.0
Thallium	5.0
Zinc	43

8.14.4.2 Domestic Wastewater

Domestic wastewater, which comprises discharges from sinks, toilets, showers, and area washdown would be disposed to a packaged waste water system and leachfield located on vacant grazing land north of the proposed project. The septic system would be designed, sized, and permitted consistent with the number of employees expected at the site during operations. The design would be subject to County review, and would adhere to the requirements of the Sacramento Planning Department to ensure compliance with local and agencies regulations and avoid potential contamination.

8.14.4.3 Stormwater, Precipitation, and Drainage

Most of the precipitation in the project area falls between November and April. Monthly average rainfall near the project site is presented in Table 8.14-5. The annual average rainfall at Clay Station near the project is 16.7 inches.

TABLE 8.14-5
Average Monthly Rainfall Near the Proposed Project Site (Clay Ranch DWR # B00 1785)

Precipitation	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Rainfall (in.)	0.89	2.03	2.85	3.40	2.97	2.50	1.59	0.48	0.18	0.05	0.05	0.21

Stormwater Runoff Prior to Construction

Currently, stormwater from the project site percolates into the soil. Excess runoff sheet flows to the north and east, where it is captured by Clay Creek and discharges into Hadselville Creek approximately 2 miles west of the project site, eventually draining into the Sacramento-San Joaquin Delta (see Subsection 8.14.3). Table 8.14-6 shows the rainfall depth expected at various return frequencies and the corresponding total runoff expected at the site. The site is currently used as grazing land, with soil types that have poor drainage.

The total runoff values indicated in Table 8.14-6 are based on the runoff from a site area of 25 acres. This allows a direct comparison to the portion of the final developed site area that will have surface runoff directed to the proposed stormwater detention pond.

TABLE 8.14-6
Stormwater Runoff Prior to Construction

Return Period of Storm (years)	Rainfall Depth for 24-hr Storm[a] (inches)	Total Runoff from Site for 24-hr Storm[b] (millions of gallons)
10	2.60	0.53
25	3.05	0.62
50	3.37	0.68
100	3.68	0.74

[a] From Rainfall Depth Duration Frequency for Eagles Nest, California Department of Water Resources, Sacramento County Station No. 269.
[b] Represents 25-acre area, which currently drains factored for surface condition.

Storm Runoff After Construction

Sacramento County requires permitting of any grading be pursuant to County Ordinance 16.44 *et seq.* The grading permit, including an erosion and sediment control plan, is prepared as part of the site improvement permit review submitted to the Planning Department prior to construction. After construction, the site will be designed to drain stormwater runoff to ~~an on-site detention pond. From the detention pond, the stormwater will be discharged into to~~ Clay Creek, which runs along the north side of the project site. The peak discharge from the project site ~~detention pond will~~ would be regulated to less than the pre-construction flow rate for the 10-year storm. Figure 8.14-4 shows the post-construction runoff and drainage patterns. Table 8.14-7 indicates the total stormwater runoff after construction for the 25-acre portion of the developed site that will drain to the stormwater ~~detention pond via a~~ system of pipes, channels, and drains. The cooling tower, landscaping, and natural areas will cover the remaining portion of the 35~~0~~-acre developed site. The post-construction stormwater runoff from these areas will be less than the pre-construction runoff as a result of the stormwater captured in the cooling tower.

TABLE 8.14-7
Stormwater Runoff Following Construction

Return Period of Storm (years)	Rainfall Depth for 24-hr Storm[a] (inches)	Total Runoff from Site for 24-hr Storm[b] (millions of gallons)
10	2.60	1.26
25	3.05	1.46
50	3.37	1.61
100	3.68	1.76

[a] From Rainfall Depth Duration Frequency for Eagles Nest, California Department of Water Resources, Sacramento County Station No. 269.
[b] Represents 25-acre area, which will drain to proposed stormwater detention basin, factored for surface condition.

8.14.5 Effects on Water Resources

The potential effects of the project on water resources were derived from the CEQA checklist and evaluated with respect to the following criteria.

A project is considered to have a potentially significant effect if it would:

- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site.
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site.
- Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.
- Violate any water quality standards or waste discharge requirements.
- Otherwise substantially degrade water quality.

- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted).
- Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map.
- Place structures which would impede or redirect flood flows within a 100-year flood hazard area.
- Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam.
- Cause inundation by seiche, tsunami, or mudflow.

The following sections describe potential impacts of the project on water resources with specific respect to these evaluation criteria.

8.14.5.1 Surface Water

The project will cause the following potential impacts to surface water resources:

- Construction of the project would require diverting and relocating three tributaries to Clay Creek.
- Construction of the project will require grading and clearing of up to 50 acres, with potential increases in erosion and sediment runoff to surface water.
- Stormwater runoff from the project site will accumulate oil, grease, and chemical residues from the plant site and distribute them to Clay Creek, which would cause water quality degradation and reduce beneficial uses downstream.
- Discharge of sanitary wastewater consisting of effluent from toilets, showers, and washdown water will be discharged to an on-site packaged waste treatment and leachfield system, which could potentially cause adverse impacts to surface water quality.

~~Cooling water blowdown and other wastestreams will be discharged to Clay Creek under an NPDES permit, potentially resulting in water quality degradation of Clay Creek, and reduced beneficial uses downstream.~~

- Construction of the proposed gas pipeline will cross rivers (Cosumnes River, Badger Creek, Laguna Creek~~,~~) ~~Clay Creek),~~ irrigation ditches, canals, vernal pools, and ephemeral streams that may be adversely affected by sediment, erosion, and water quality degradation as a result of construction.
- Use of the construction laydown area will require temporary grading <u>of</u> 20 acres <u>either</u> south of Clay East Road, <u>or west of the project site</u> potentially exposing this area to additional erosion. ~~No ephemeral drainages in this area would need to be filled or graded to allow temporary use of the laydown area.~~

Each of these potential effects is evaluated below to determine whether the potential effect is significant.

Diversion and Relocation of Three Tributaries to Clay Creek

The project site is presently crossed by three ephemeral drainages, all of which join Clay Creek within 0.25 mile of the site. These drainages have distinct hydrologic features and some vegetation that indicate they would be defined as jurisdictional wetlands according to ACOE criteria. The applicant proposes to divert these drainages around the proposed site to maintain local drainage, minimize erosion in the project area, and maintain the benefits of the drainages. The proposed routes of these three drainages ~~that would meet these objectives~~ are shown in Figure 8.14-4.

The drainages are generally between 6 and 15 feet wide, where erosion has downcut through the surface soil to a hardpan below. The vegetation in the drainages is distinct from the surrounding annual grasslands, but the channel in each case is relatively narrow. There are no riparian shrub or tree species supported by the drainages, possibly indicating a relatively low level of wetlands development. The upper portions of the easternmost drainages (A, B, C, D) have all been previously modified by construction of the Rancho Seco Plant, the photovoltaic plant, and the old mine tailings. Drainages E and F were culverted when Clay East Road was built. All these drainages appear to flow only during winter rains and are ephemeral. The drainages also have enough slope that there is little opportunity for water ~~does not appear~~ to pool or pond in a manner that would support aquatic biota.[1]

The Clean Water Act prohibits fill of wetlands, except as authorized under Section 404 permitting. A Section 404 permit requires detailed depictions of the extent of wetlands and the measures implemented to avoid adverse impacts from fill. The ACOE, which implements and enforces the Section 404 permit, then applies conditions and mitigations to avoid, minimize, or compensate for adverse impacts. These conditions include limiting the disturbance area, specifications for revegetation and restoration, and, as appropriate, monitoring and compliance (Federal Register, 2000).

One of the conditions of the 404 permit is to obtain a Water Quality Certification (Section 401 permit) issued by the RWQCB. The 401 permit requires conditions to protect and maintain water quality downstream of the fill.

As part of the Section 404 authorization, the ACOE will prepare an environmental assessment pursuant to NEPA and submit this document for review and concurrence by the USFWS. The USFWS will apply or add conditions that specify measures to avoid, minimize, or compensate for any potential adverse impacts to protected plant, fish, and wildlife species.

With implementation of the conditions and mitigations required of a Section 404 and 401 permit, impacts to these drainages from filling during construction will be reduced to less than significant.

[1] Other drainages in the general area that would not be affected by project construction pool water for an extended period and would potentially support aquatic biota.

Potential Erosion and Sediment Control from Grading up to 50 Acres

To construct the project, approximately 50 acres of land that is presently vegetated will be cleared of vegetation, graded, and leveled. Exposing 50 acres of soil to wind and rain may potentially cause erosion and sediment runoff, resulting in adverse impacts to surface waters downstream of the project and groundwater under the project site (Figure 8.14-5).

The project laydown areas located south of Clay East Road will require clearing and grading approximately 20 acres of annual grassland, including spanning or culverting two ephemeral streams. Exposing 20 acres of soil to wind and rain may potentially cause erosion and sediment runoff, resulting in adverse impacts to surface waters downstream of the project. The proposed grading plan, along with proposed erosion and sediment control features, are shown in Figure 8.14-4.

The County requires that projects requiring grading of an area larger than 5 acres obtain and comply with an Erosion and Sediment Control Plan that meets County, regional, and state standards. Three agencies coordinate efforts to implement the NPDES stormwater construction permit program. The applicant must prepare SWPPP for avoiding excessive erosion, capturing sediments before they migrate off-site, and protecting water quality downstream of the project. The SWPPP specifies Best Management Practices (BMPs) such as silt fences, detention basins, rock structures, revegetation, and erosion barriers to minimize the potential for off-site migration of sediments. The SWPPP also contains a section that describes equipment fueling and lubrication practices and defines parking areas and waste storage areas to control any spills from fuel, lubricants, or solvents. The SWPPP is required by the RWQCB, implementing regulations of the Clean Water Act. The County program is designed to be consistent with permit requirements administered by the RWQCB.

With preparation and implementation of the SWPPP, and compliance with conditions required by the County and the RWQCB, erosion and sediment from the site during construction will be controlled such that off-site impacts will be less than significant.

Stormwater Runoff from the Project Site

Stormwater that falls within the developed project site during construction and operation may potentially dissolve oils, grease, and other contaminants and carry them along with entrained sediments into Clay Creek downstream of the project site. These contaminants would potentially reduce the ability of Clay Creek to support biota and other beneficial uses.

Stormwater runoff from industrial facilities is regulated by the USEPA through the NPDES program, administered by the RWQCB. In addition to a construction NPDES permit, the applicant will be required to file a Notice of Intent (NOI) to comply with the General Permit for stormwater runoff from the industrial facility. The NOI includes a description of the measures that would be used to meet the detention, treatment, sampling, and reporting requirements of the regulations.

~~At this time, the applicant proposes to construct an on-site detention basin that will capture essentially all site runoff. This will maintain the volume and rate of offsite runoff at present levels that which presently occurs. On-site detention may also provide some water quality benefits.~~

Obtaining and complying with an NPDES Industrial Stormwater Permit will reduce the potential impacts from off-site stormwater runoff to less than significant.

Discharge of Sanitary Wastewater to Waste Treatment and Leachfield System

It is anticipated that three to five employees will be onsite during project operations; and up to 20 employees and visitors at a time. Water from toilets, sinks, showers, and washdown areas will be disposed to a package waste treatment system and leachfield that will be located adjacent to the project site.

Leachfields can cause contamination of groundwater if operated improperly, overloaded, or located in soils that area unsuitable. The County permits waste treatment systems and leachfields based on a site-specific soil test and review and approval of the proposed design and layout of waste facilities. To date, County staff have not indicated that a septic and leachfield system would be inappropriate in this area, but site-specific data and designs are required ("perc test") before approval can be granted.

With appropriate soil testing and design review and approval by the County, disposal of sanitary waste to a packaged waste treatment and leachfield system will not cause significant adverse impacts to water resources in the project vicinity.

Cooling Water Blowdown to Zero--liquid Discharge~~Clay Creek~~

The applicant proposes to discharge cooling water blowdown and other ~~high quality~~ waste streams to a brine concentrator and crystallizer to produce a salt cake product. This system is generically referred to as Zero--liquid Discharge (ZLD). ~~Clay Creek via a 14-inch pipeline. The discharge would be regulated under the NPDES program, which is administered and enforced by the RWQCB.~~

~~The NPDES program allows discharge of cooling waters and similar waste streams to surface waters if doing so does not compromise the existing or future beneficial uses of the surface waters. The applicant has prepared an NPDES application for surface water discharge (Appendix 8.14A). The NPDES application describes the proposed waste discharge in detail, including the physical and chemical characteristics, volume, and frequency of discharge. Water quality of the proposed discharge is described in detail, and the potential for adverse impacts to beneficial uses is evaluated. The RWQCB staff reviews the application and makes recommendations for numerical limits to be included in Waste Discharge Requirements (WDR), which specify the monitoring and compliance requirements. Typical numerical criteria are proposed in Table 8.14-3. A typical NPDES permit/WDR specifies the average and maximum concentrations of a variety of physical and chemical characteristics that can not be exceeded in discharges to protect downstream uses. The Ranch Seco Plant presently discharges approximately 13 mgd of cooling water under an existing NPDES permit.~~

~~An application for NPDES discharge will be submitted to the RWQCB in July 2002 and will be determined to be complete and adequate, with the exception of the supporting CEQA document, which will be this AFC. The RWQCB will approve the WDR subsequent to approval of the AFC.~~

Implementation of a ZLD system ~~In obtaining and complying with the NPDES permit and WDR, the project~~ will avoid any potential adverse impacts to surface waters to ~~reduce~~

~~impacts to beneficial uses of~~ less than significant, and, therefore, have less-than-significant impacts on water resources.

Construction of the Proposed Gas Pipeline

The proposed gas pipeline crosses 27 rivers, creeks, irrigation canals, riparian areas, vernal pools, and other drainages that are potentially jurisdictional wetlands. Most of these crossings are of highly modified stormwater drains and ditches; however, there would be ~~two~~ one crossings of the Cosumnes River, one of Badger Creek, and one ~~one of tributaries to Willow Creek, and one~~ of Laguna Creek. Construction through wetlands can potentially disrupt the physical shape of the waterways, cause increased bank erosion, and degrade water quality through direct contamination or increases in sediment. Bankside vegetation that holds soil and supports sensitive biota can be harmed or removed by construction. Areas that are not determined to be jurisdictional wetlands or Waters of the U.S. (such as seasonal irrigation ditches) do not require permits, but construction in these areas may not violate laws protecting water quality or endangered species without further authorization.

As described above, the ACOE prohibits fill of jurisdictional wetlands except as authorized by permit pursuant to Section 404 of the Clean Water Act. The ACOE authorizes wetland fill under Nationwide Permits for typical utility crossings, road crossings, or outfall construction of a minor and routine nature. The ACOE requires the applicant to agree to a set of Standard Conditions that require erosion and sediment control, good construction practices, notification, monitoring, and reporting to avoid adverse impacts to wetlands. Larger or more unusual wetland fill activities require an Individual Permit for which the ACOE proscribes project-specific mitigation measures. According to the ACOE, the applicant can expect to apply for a separate permit for each of the locations where pipelines cross jurisdictional wetlands (Cutler, 2001). In addition to the Section 404 permit, any construction that disturbs the "bed and banks" of a stream requires a Streambed Alteration Agreement (SAA) with CDFG, pursuant to Section 1601 of Fish and Game Code. This generally does not apply to irrigation ditches and lined canals but will apply to the Cosumnes River, Badger Creek and Laguna Creek. CDFG determines which ~~wetlands~~ crossings require an SAA on a case-by-case basis. Although trenchless construction methods such as HDD avoid direct impacts to "bed and banks" of the stream, CDFG has required SAAs because of the potential for "frac outs."[2] An SAA stipulates construction methods, monitoring, mitigation, and emergency response plans for a failure in the construction system.

Table 8.14-8 provides a listing of the potential wetland crossings of the proposed gas pipeline, along with an evaluation of whether or not they are jurisdictional. Most of the wetlands are ephemeral, can be open-trenched during the dry season, and recontoured after construction to avoid any impacts to erosion or water quality. A Section 404 permit, Streambed Alteration Agreement, and Section 401 water quality waiver applications will be prepared and approved prior to construction for those wetlands that call for these requirements. The permit applications generally require a description of the beneficial uses and habitat values of the crossed waterway and specifications of the measures that would be used at that site to avoid, minimize, or compensate for adverse impacts. Compliance

[2] A "frac out" is an event where pressurized drilling mud in the HDD forces its way to the surface with potentially non-beneficial results.

with the conditions specified by the ACOE, CDFG, and RWQCB in these permits and agreements will reduce impacts to crossed wetlands to less than significant.

TABLE 8.14-8
Potential Wetlands Crossed by Proposed Cosumnes Power Plant Gas Pipeline

Site	Mile [a]	Wetlands Type	Avoidance Measures	Possible Permit	Notes
1	0.20	Seasonal Wetlands	Open trench during dry season	Section 404, 401 NWP 12	Plant species indicate seasonal flooding. Shrink/swell soils are present. Construction activities would affect the edge of several wetlands. Areas occur on both sides of the railroad.
2	0.30	Seasonal Wetland	Open trench during dry season	Section 404, 401 NWP 12	Wetland plant species present as well as star thistle, suggesting temporary flooding, not lengthy inundation period. Shrink/swell soils present. This area runs parallel to the proposed pipeline route and edge would be potentially affected by construction.
3	0.60, south of Sims Road	Seasonal Wetland	Open trench during dry season	Section 404, 401 NWP 12	Dominated by cattails, approximately 1 ft. of water in August.
4	0.60, just north of Sims Road	Seasonal Wetland	Open trench during dry season	Section 404, 401 NWP 12	No vegetation is present, marginal shrink/swell soils, water ponds in wet season.
5	1.2-1.3	Seasonal Wetland	Open trench during dry season	Section 404, 401 NWP 12	Wetland species are present, shrink/swell soil is present.
6	1.7-2.0	Vernal pool	Open trench during dry season	Section 404, 401 NWP 12	Swales and remnants of characteristic vernal pool plant species.
7	2.3-2.4	Vernal pool area	Open trench during dry season	Section 404, 401 NWP 12	Potential vernal pool area. Slight depression w/ marginal vernal pool species, i.e., rabbit's foot grass, indicative of ponded areas in the wet season.
8	2.8	Vernal pool area	Open trench during dry season	Section 404, 401 NWP 12	Potential vernal pool area. Slight depression w/ marginal vernal pool species, i.e., rabbit's foot grass, indicative of ponded areas in the wet season.
9	2-3.8	Vernal pool area	Open trench during dry season	Section 404, 401 NWP 12	Grassland area with multiple vernal pools covering several acres of land. Vernal pool plant species are present.

TABLE 8.14-8
Potential Wetlands Crossed by Proposed Cosumnes Power Plant Gas Pipeline

Site	Mile [a]	Wetlands Type	Avoidance Measures	Possible Permit	Notes
10	3.0	Seasonal wetland	Open trench during dry season	Section 404, 401 NWP 12	This dry depression with wetland species covers a large area within the vernal pool complex, present on both the west and the east sides of the railroad track.
11	3.87	Seasonal Wetland Riparian vegetation/ ditch	HDD borings	Section 404, 401 NWP 12 SAA 1601	
12	4.20	Ditch	Open trench during dry season		Ditch intersects pipeline crossing.
13	5.5	Ditch	Open trench during dry season		Ditch intersects pipeline. It does not appear to have wetland characteristics in aerial photo, though wetland is area is adjacent to it.
14	5.5	Seasonal Wetland	Open trench during dry season	Section 404, 401 NWP 12	This area runs parallel to the proposed pipeline route. The east side of the wetland could potentially be affected during construction
15	5.9	Ditch	Open trench during dry season		Intersects pipeline route, near seasonal wetland, but does not appear to be linked to it. Placing pipeline east of it, would avoid wetland impacts. There is some other non-wetland vegetation in this area, as seen from aerial photos.
16	6.0	Riparian Vegetation	Open trench during dry season	Section 404, 401 NWP 12 SAA 1601	This crossing occurs at the end of a row of riparian vegetation that meets the proposed pipeline perpendicular to the pipeline.
17	6.0-6.92	Unnamed stream crossing adjacent to Ed Rau Rd.	HDD borings	Section 404, 401 NWP 12 SAA 1601	There is also riparian vegetation in this area, and avoidance measures should be taken. Boring length should be increased
18	6.3	Ditch	Open trench during dry		The ditch intersects the pipeline route. This is an area on the side of an agricultural field subject to ponding during the wet season. Ponding

TABLE 8.14-8
Potential Wetlands Crossed by Proposed Cosumnes Power Plant Gas Pipeline

Site	Mile [a]	Wetlands Type	Avoidance Measures	Possible Permit	Notes
			season		would likely occur in tire ruts that are visible from aerial photograph.
19	6.5-7.7	Ditch	Open trench during dry season		Linear roadside ditch running parallel to pipeline. Moving the pipeline to the north approximately 50 ft. would avoid this area.
20	7.93 Bruceville Road Crossing	Stream Crossing Riparian Vegetation	HDD	Section 404, 401 NWP 12 SAA 1601	A channeled stream supports a fairly dense line of mature riparian vegetation. The pipeline crosses through the riparian vegetation and the river.
21	9	Riparian vegetation	Open trench during dry season or HDD	Section 404, 401 NWP 12 SAA 1601	Riparian vegetation on north side of Core road is supported by a small stream on the south side of the road. The proposed pipeline would travel through the northern side where the vegetation occurs.
22	10.94-10.5	Riparian Vegetation Seasonal Wetland	Open trench during dry season	Section 404, 401 NWP 12 SAA 1601	Riparian vegetation lines the south side of Eschinger road. Three individual isolated seasonal wetland areas adjacent to each other cross the proposed pipeline at their northern end.
23	10.7	Ditch	Open trench during dry season		Roadside ditch parallels pipeline route. Moving pipeline south, for approximately 50 ft. for the length of 0.5 miles would avoid this area.
24	12.39-12.87	Cosumnes River Crossing	HDD borings	Section 404, 401 NWP 12 SAA 1601	Open water and well-developed riparian corridor.
25	13.28-13.61	Badger Creek crossing	HDD borings	Section 404, 401 NWP 12 SAA 1601	Open water and well-developed riparian corridor.
26	13.61-14.11 Drilling pad to Receiving pit	Lake, seasonal wetland	HDD borings	Section 404, 401 NWP 12 SAA 1601	Lake is part of a larger stream and seasonal wetland system. Vernal pools occur to the south west

TABLE 8.14-8
Potential Wetlands Crossed by Proposed Cosumnes Power Plant Gas Pipeline

Site	Mile [a]	Wetlands Type	Avoidance Measures	Possible Permit	Notes
27	14.11-14.35	Highway 99 crossing, Unnamed stream crossing and Vernal Pool	HDD borings	none	The stream crossing and vp happen to be in the bore areas
28	14.35-18.73	Unnamed Stream Crossing at 14.8	HDD borings	Section 404, 401 NWP 12 SAA 1601	Stream crossing with riparian vegetation on the proposed pipeline route in an area with a vernal pool complex to the north. Parallel to the riparian vegetation, south of the road, is private land containing at least 7 structures.
29	14.36- 17.00	Ditch	Open trench during dry season		Can avoid this area by moving pipeline north approximately 50ft further into agricultural land. One issue to be aware of is a private residence that the pipeline crosses currently. By moving it north, the pipeline would move further into the private property.
	17.40-17.50	Ditch	Open trench during dry season		Adjust the pipeline north approximately 50 ft. to avoid this area.
30	17.70-18.72	Ditch	Open trench during dry season		Adjust pipeline south approximately 50 ft. into agricultural land to avoid area.
31	18.73-18.90	Ditch	Open trench during dry season		Roadside ditch. Adjust pipeline approximately 50 ft. to the south to avoid area.
32	18.73-20.47 California Traction to Laguna Creek	Stream crossing (unnamed)	HDD borings	Section 404, 401 NWP 12 SAA 1601	Appears to be a manmade stream, with some riparian habitat present. Though stream ends without crossing the road at this point, the pipeline crosses near the end.
33	19.30-20.00	Ditch	Open trench during dry season		Roadside ditch. Area can be avoided by moving pipeline approximately 50 ft. to the south.

TABLE 8.14-8
Potential Wetlands Crossed by Proposed Cosumnes Power Plant Gas Pipeline

Site	Mile [a]	Wetlands Type	Avoidance Measures	Possible Permit	Notes
34	20.47-21.58 Laguna Creek to Rail Road Bore	Seasonal Wetland	Open trench during dry season	Wetlands: Section 404, 401 NWP 12	Two seasonal wetlands occur in this section. One occurs just north of and parallel to the proposed route. Construction has the potential to impact the edge of this area. The second is a small v-shaped system that bisects the pipeline route
35	21.60-22.60 Railroad Bore to Folsom South Canal	Seasonal Wetland	Open trench during dry season	Wetlands: Section 404, 401 NWP 12	This stretch contains a continuous line of individual seasonal wetlands located in the roadside ditch along the proposed route. More extensive wetland systems occur to the northwest and to the southeast of this section
36	21.6-22.0	Ditch	Open trench during dry season		Occurs in the same path of the pipeline route and for is also designated as seasonal wetland (see description above for Site 35). Follow same avoidance measures as listed above for Site 35
37	22.6-24 Folsom South Canal to East Clay Road	Seasonal Wetland	Open trench during dry season	Wetlands: Section 404, 401 NWP 12	The surrounding area has extensive seasonal wetlands, some, parts of larger systems, some, isolated pools. Nine (9) seasonal wetlands occur in this stretch, one, for a substantial distance along the proposed route. Five (5) of the wetlands are relatively small areas along the road which hold water during the rainy season. One (1) is extensive and occurs for a significant portion along the proposed route. Three (3) are portions of 3 separate channelized wetland systems, occurring on both sides of the highway and bisecting the route.
38	23.3-23.8	Ditch	Open trench during dry season		Roadside ditch. Occurs in the same path of the pipeline route and is also designated as seasonal wetland (see description above for Site 37). Follow same avoidance measures as listed above for Site 37.
39	25.2-25.7	Ditch	Open trench during dry season		Roadside ditch running parallel to pipeline on the edge of agricultural land. Moving the pipeline approximately 50 ft to the north would avoid this area.

TABLE 8.14-8
Potential Wetlands Crossed by Proposed Cosumnes Power Plant Gas Pipeline

Site	Mile [a]	Wetlands Type	Avoidance Measures	Possible Permit	Notes
40	24-26 East Clay Road to Rancho Seco site	Seasonal wetlands, riparian vegetation, stream crossing	Open trench during dry season	Wetlands: Section 404, 401 NWP 12 SAA 1601	This stretch along the pipeline route is dotted with 14 Seasonal wetlands, 2 vernal pools, and one area of riparian vegetation. The wetlands are made up of branches of ephemeral streams stemming off of a centralized area, as well as isolated individual wetlands that have established in low lying areas, such as in ditches. One vernal pool the proposed route crosses is part of a larger body occurring on both sides of Clay East Road. It is a portion of a larger vernal pool area which is situated primarily south of the road. The second vernal pool is an isolated vernal pool along the proposed route. The riparian vegetation, remnants of a natural system, extends from a stock pond and farm on the north side of East Clay Road. It crosses the proposed route at the road and extends to another pond. On this side of the road (south) is a vernal sink occurring in close proximity to the riparian vegetation, but not in the pipeline route. The ephemeral stream, crosses road through a culvert. It is a narrow channel that appears to branch out from a larger wetland system. The branch crosses the road and the pipeline route, dissipates in a pasture on the east side of the road, and then continues into a larger wetland system. Vernal pools also are in the immediate area.

[a] Mile markers are based on estimation from aerial photographs.

8.14.5.2 Groundwater

The project would not use groundwater on the project site for any purpose. Therefore, withdrawals for water supply would not adversely affect other groundwater users in the vicinity.

The area that will be paved by the proposed project is not a significant recharge area for groundwater and, thus, will not reduce the available recharge of groundwater.

Implementation of BMPs and appropriate waste storage and management, will reduce the potential for spills or other upset, which could result in environmental contamination and adversely affect groundwater quality.

The project will not substantially deplete groundwater supplies or interfere with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level.

8.14.5.3 Flooding Potential

The project will be constructed outside the 100-year flood plain and will capture stormwater runoff from the site and will be engineered such that there is no significant~~in an on-site detention basin; therefore, there will be no~~ increase in the rate of off-site runoff. Construction of the project will require altering the local drainage patterns of three ephemeral swales that are tributaries to Clay Creek. However, these alterations will not increase the rate or amount of surface runoff in a manner that will result in flooding on- or off-site.

~~Stormwater runoff will be captured and held in an on-site stormwater detention basin so that runoff will neither exceed the capacity of existing or planned stormwater drainage systems, nor cause substantial additional sources of polluted runoff.~~

The project will be constructed outside the 100-year flood hazard area, and will not place housing within a 100-year flood hazard area. Neither will the project place any structures that would impede flood flows. Seasonal stormwater drainage that flows in the three tributaries to Clay Creek will be redirected around the site, but the rate or volume of flow in Clay Creek (approximately 0.1 mile north of the site) will not change ~~remain unchanged.~~ significantly. This would have no impact on flooding.

Because the project will not cause local flooding, the project will not expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam.

Finally, the project will be constructed outside any area where inundation by seiche, tsunami, or mudflow has historically, or would be likely to occur in the future.

8.14.6 Mitigation

The following sections describe proposed mitigation to avoid, reduce, or compensate for potential adverse impacts potentially resulting from project implementation.

8.14.6.1 Surface Water

To mitigate for potential impacts described in 8.14.5.1 above, the applicant will implement the following mitigation measures to reduce impacts to levels that are less than significant.

- Diversions and relocations of the three tributaries to Clay Creek will be permitted, designed and constructed according to agreements with the ACOE, RWQCB, and CDFG. Conditions specifying the measures implemented to support continued flood capacity, beneficial uses, and prevention of erosion and sedimentation will be specified in these permits and agreements. With mitigation, impacts will be less than significant.
- An NPDES stormwater permit will be obtained from the County prior to grading and clearing the estimated 50-acre site. The NPDES permit will contain conditions and specifications to implement appropriate Best Management Practices to avoid adverse impacts to stormwater receiving waters. With mitigation, impacts will be less than significant.
- An NPDES industrial operations stormwater permit will be obtained from the RWQCB prior to operation of the facility. The NPDES permit will contain conditions and specifications to implement appropriate BMPs to avoid adverse impacts to stormwater receiving waters, as well as monitoring and reporting requirements to comply with the RWQCB stormwater program. The District anticipates that an on-site stormwater detention basin will be constructed that will attenuate the rate of off-site flows. With mitigation, impacts will be less than significant.
- Sanitary wastewater will be discharged to an on-site packaged waste treatment system and leachfield. The design of the leachfield will be reviewed by the County of Sacramento for compliance with appropriate standards to avoid potential for adverse impacts to surface or groundwaters. With appropriate design, assured by the required County review of the design and location of the septic system and leachfield, adverse impacts will be less than significant
- Cooling water blowdown and other wastestreams would be disposed to a zero-liquid discharge system~~discharged to Clay Creek under an NPDES permit issued by the RWQCB. The RWQCB requires an application that specifies the expected water quality of effluent; the agency issues WDRs that limit the concentrations of chemical constituents of the effluent to ensure beneficial uses of downstream surface or groundwaters are not adversely affected. The WDRs also specify monitoring and reporting requirements to assure long-term compliance. The RWQCB evaluates permits every 5 years and adjusts the effluent limitations if necessary to protect beneficial uses.~~. Implementation of ZLD ~~Compliance with the WDRs issued by the RWQCB~~will assure that discharges from cooling water and other wastestreams do not cause adverse impacts to beneficial uses.
- For each location where the gas pipeline will cross a river (Cosumnes River, Laguna Creek, Badger Creek, Clay Creek), irrigation ditches, canals, vernal pools, and ephemeral streams, the applicant will determine whether the waters are jurisdictional, and obtain necessary authorizations under Section 404. If necessary, Streambed Alteration Agreements and Section 401 Water quality waivers would be obtained. The applicant expects to use trenchless construction methods, such as HDD, or conventional

jack and bore methods to construct the pipeline under rivers such as the Cosumnes, Badger Creek, Laguna Creek, and Clay Creek. A "frac out" plan will be developed and approved by CDFG prior to use of HDD under waterway. The "frac out" plan will specify measures to avoid, minimize, and, if necessary, respond to "frac out" events. Where allowed by permit, conventional trench construction will be used to cross irrigation ditches, ephemeral streams, or canals. Vernal pools, potentially occupied by federally listed species, will be avoided by trenchless construction or crossed in a manner permitted by the USFWS.

8.14.6.2 Groundwater

The project will cause no significant impacts on groundwater quantity or quality; therefore, no mitigation is required.

8.14.6.3 Flooding Potential

The project will cause no significant impacts on flooding potential; therefore, no mitigation is required.

8.14.7 Proposed Monitoring Plans and Compliance Verification Procedures

The applicant anticipates applying for and complying with permits listed in Section 8.14.9, below. Compliance with these permits typically requires monitoring, reporting, and verification to the agency issuing the permit. The applicant anticipates that these reports would also be made available to the CEC compliance staff if requested.

8.14.8 Cumulative Impacts

The project site is located in a rural area, with relatively little development. The dominant land use in the area is agricultural. In recent years there has been a gradual conversion of open pasture uses to vineyards, and a gradual increase in the number of residences established on 5- to 500-acre parcels. There are no other industrial developments or large paved areas anticipated in the project area. All impacts to surface and groundwater quality from this project will be reduced to less than significant through implementation of permit conditions and compliance measures.

Therefore, the cumulative impacts of this project, when considered in conjunction with the other types of development anticipated in the region, are not expected to cause cumulatively significant impacts to water quality in the area.

8.14.9 Permits Required

Water quality permits required for the project include the following:

- Sacramento County Grading Permit, Sacramento County Code 16.44
- CVRWQCB Construction Activity NPDES Stormwater Permit General Permit
- CVRWQCB General Industrial NPDES Stormwater Permit General Permit

~~CVRWQCB General NPDES Discharge Permit~~

- Streambed Alteration Agreement (Section 1601) for modifications to any creek, if required, for construction of the water or gas pipelines

- U.S. Army Corps of Engineers Wetlands fill permit Section 404 for fill in jurisdictional wetlands
- Water Quality Certification Section 401 from the RWQCB if a 404 permit is required

8.14.10 Agency Contacts

A summary of required permits is provided in Table 8.14-9.

TABLE 8.14-9
Permits and Permitting Agencies for CPP Water Resources

Permit/ Implementation	Agency
County Grading Permit Applicant will file application within 90 days prior to construction	Tony Do Sacramento County Public Works Agency 827 7th St., Room 304 Sacramento, CA 95814 (916) 874-6581 (Fax) 916-874-7100
County Stormwater Requirements Applicant will file application within 90 days prior to construction	Tony Do Sacramento County (as above)
Construction Activity NPDES Stormwater and General Industrial Stormwater Permit Applicant will file application within 90 days prior to construction	RWQCB Leo Sarmiento (916) 255-3049
Water Quality Certification (Section 401) in support of Section 404 agreement Applicant will file application for waiver upon Corps verification of 404 application	RWQCB Patricia Leary (916) 255-3023
Streambed Alteration Agreement 1601 Applicant has initiated consultation with CDFG to determine conditions to avoid impacts. Agreement required prior to construction	Dale Whitmore Gary Hobgood CDFG Streambed Alteration Agreements (916) 983-5162
Wetlands Permit 404 (and Water Quality Certification, Section 401) Wetland Delineations complete for project site Notifications for wetlands crossings pursuant to NWP 12 of Section 404, anticipated 90 days prior to construction	USACOE Justin Cutler U.S. Army Corps of Engineers (916) 557-5258

8.14.11 References

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RWQCB. 1996. Adopted Waste Discharge Requirements for Sacramento Municipal Utility District, Rancho Seco Nuclear Generating Station, Unit 1 and Rancho Seco Park, Sacramento County. March 27.

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INSERT

Figure 8.14-3aR to 3dR

Revised Water Balance Diagrams